Descartes and Sunspots: Matters of Fact and Systematizing Strategy in the *Principia Philosophiae*

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Descartes wrote two treatises of corpuscular-mechanical natural philosophy, the unfinished *Le Monde* (1633) and the *Principia philosophiae* (1644/1647). Both present Descartes' vortex celestial mechanics; his explanation of the orbital behaviours of planets, comets and satellites; and his mechanistic theory of light in its cosmic setting. But the differences are dramatic: the *Principles* is a textbook in neo–Scholastic style; *Le Monde* an attempt at persuasion of *honnêtes hommes* in the vernacular. Beyond these differences, historians have tended to concentrate on contrasts between the treatises in regard matter theory. Commentators have also, perforce, noted the much richer invocation of well attested matters of fact in the *Principia*, notably Descartes' attention to magnetism, sunspots, *novae* and variable stars.

This paper argues that far from being opposed intellectual practices inside the *Principles*, Descartes' moves in matter theory and his adoption, and re-framing, of wide swathes of novel matters of fact, were two sides of the same coin—that coin being his strategies for improving the systematic power, scope and consistency of the natural philosophy presented in the *Principia* compared to *Le Monde*. Moreover, the center of gravity of these strategies did not reside in Descartes' metaphysical grounding of the natural philosophy; or in his now elaborate teaching concerning the laws of motion and collision. Rather, we argue that Descartes' systematising strategy focussed mainly upon weaving ranges of novel matters of fact into *explanatory and descriptive narratives with cosmic sweep and radical realist Copernican intent*. Jacqueline Biro has recently identified gambits of this type as "*cosmographical"* (the natural philosophical relating of heavens and earth in contemporary usage)*, seeing them as characteristic of radical realist Copernican natural philosophers, starting with Copernicus, and running through the contributions of Bruno, Gilbert, Galileo and, as we suggest here, most elaborately, Descartes himself.

* Jacqueline Biro, *On Earth as in Heaven: Cosmography and the Shape of the Earth from Copernicus to Descartes* (2009)